AMENDMENTS TO THE SPECIFICATION

Please substitute the following paragraph for the paragraph starting at page 1, line 5 and ending at line 12.

The present invention relates to a lens system and an optical device using the same and, more particularly, is suitably applicable to optical devices such as silver-film cameras, video cameras, electronic still cameras, and so on with high optical performance, which lens system is well corrected for aberration variations during focusing in a wide subject range from an object at infinity to an object at a near distance.

Please substitute the following paragraph for the paragraph starting at page 1, line 14 and ending at line 19.

Conventionally, there are lens ~~systemes~~ systems called macrolenses or microlenses (which will be called hereinafter "macrolenses" together) intended for the principal purpose of taking pictures of near objects with ~~the~~ optical devices such as photographic cameras, video cameras, video still cameras, and so on.

Please substitute the following paragraph for the paragraph starting at page 1, line 20 and ending at line 23.

The macrolenses are designed to yield high optical performance, particularly, for near objects, as compared with ~~the~~ other taking lenses such as ~~the~~ ordinary standard lenses, telephoto lenses, and so on.

Please substitute the following paragraph for the paragraph starting at page 2, line 3 and ending at line 8.

Even if the lens ~~systemes~~ systems are corrected well for spherical aberration, coma, astigmatism, etc. among the various aberrations, ~~the~~ good optical performance cannot be expected unless the axial chromatic aberration and chromatic aberration of magnification are corrected well.

Please substitute the following paragraph for the paragraph starting at page 2, line 9 and ending at line 20.

There are conventional methods of reducing chromatic aberration of optics by provision of a diffracting optical element with diffraction action on a lens surface or in part of the optics, making use of the physical phenomenon that a refractive surface and a diffractive surface in optics have reverse chromatic aberrations for rays of a certain reference wavelength, which are disclosed, for example, in documents such as SPIE Vol. 1354 International Lens Design Conference (1990) and the like, Japanese Patent Applications Laid-Open No. 4-213421 and No. 6-324262, USP No. 5,044,706, and so on.

Please substitute the following paragraph for the paragraph starting at page 3, line 9 and ending at line 17.

Specific structures of the diffracting optical elements for obtaining this diffraction action are called kinoform and there are well-known kinoform ~~structures;~~ structures, e.g., those having continuous spacings between portions with the phase difference of 2π, those having binary shape (step shape) wherein a continuous phase difference distribution is

approximated to a step shape, those wherein the microscopic periodic pattern is approximated to a triangular wave shape, and so on.

Please substitute the following paragraph for the paragraph starting at page 22, line 10 and ending at line 15.

According to the present invention, a diffracting optical element (a ~~diffractive~~ diffractive optical surface) is provided in a portion of the optical system, so as to well correct variations in aberrations, particularly, variations in chromatic aberration with increase in the photographic magnification.

Please substitute the following paragraph for the paragraph starting at page 23, line 3 and ending at line 11.

Figs. 1A and 1B are ~~the~~ views showing the first embodiment, in which the lens system OL has at least one ~~diffractive~~ diffractive optical surface in the lens system, is symmetric or substantially symmetric with respect to a stop SP, is arranged to move the whole or part of the lens system during focusing, and is characterized by satisfying Condition (1) below.

$$\beta \geq 0.5 \qquad (1)$$

Here β is a maximum photographic magnification.

Please substitute the following paragraph for the paragraph starting at page 24, line 7 and ending at line 11.

(1-2) When the ~~diffractive,~~ diffractive optical surface is given by foregoing Eq (a), it is preferably one satisfying the following conditions:

$C1 < 0$, and

$C2 > 0$.

Please substitute the following paragraph for the paragraph starting at page 24, line 22 and ending at page 25, line 3.

Figs. 4A and 4B are ~~the~~ views showing the second embodiment, in which the lens system OL has at least one ~~diffractive,~~ diffractive optical surface in the lens system, is of a substantially symmetric type consisting of a first lens unit L1 of a positive refracting power, a stop SP, and a second lens unit L2 of a positive refracting power, is arranged to move the entire lens system during focusing, and utilizes floating to change the spaces before and after the stop SP during focusing.

Please substitute the following paragraph for the paragraph starting at page 25, line 4 and ending at line 5.

In this second embodiment the first surface is comprised of a ~~diffractive,~~ diffractive optical surface.

Please substitute the following paragraph for the paragraph starting at page 25, line 22 and ending at line 26.

(2-3) When the ~~diffractive,~~ diffractive optical surface is given by the foregoing Eq (a), it is preferably one satisfying the following conditions:

$C1 < 0$, and

$C2 > 0$.

Please substitute the following paragraph for the paragraph starting at page 26, line 8 and ending at line 18.

Figs. 7A and 7B are ~~the~~ views showing the third embodiment, in which the lens system OL has at least one ~~diffractive,~~ diffractive optical surface in the lens system, has a first lens unit L1 of a positive refracting power, a second lens unit L2 of a positive refracting power, and a negative lens unit L4 closest to the image plane, in the order (named) from the object side, and is arranged to move the first lens unit and second lens unit toward the object side and increase the air gap on the object side from the negative lens unit during focusing from the infinity object to the near object.

Please substitute the following paragraph for the paragraph starting at page 26, line 22 and ending at line 23.

In this third embodiment the third surface is comprised of a ~~diffractive,~~ diffractive optical surface.

Please substitute the following paragraph for the paragraph starting at page 27, line 16 and ending at line 20.

(3-3) When the ~~diffractive,~~ diffractive optical surface is given by the foregoing Eq (a), it is preferably one satisfying the following conditions:

$C1 < 0$, and

$C2 > 0$.

Please substitute the following paragraph for the paragraph starting at page 27, line 21 and ending at line 23.

(3-4) The ~~diffractive,~~ diffractive optical surface is preferably provided in the first lens unit or in the second lens unit.

Please substitute the following paragraph for the paragraph starting at page 28, line 6 and ending at line 18.

Figs. 10A and 10B are ~~the~~ views showing the fourth embodiment, in which the lens system has at least one ~~diffractive,~~ diffractive optical surface in the lens system, has a first lens unit L1 of a positive refracting power and a second lens unit L2 of a negative refracting power in the order (named) from the object side, and is arranged to move the first lens unit toward the object side during focusing from the infinity object to the near object. In the fourth embodiment the eighth surface is comprised of a ~~diffractive,~~ diffractive optical surface. In the fourth embodiment the lens system is preferably constructed to satisfy at least one of the following conditions.

Please substitute the following paragraph for the paragraph starting at page 28, line 25 and ending at line 26.

A18

(4-2) The ~~diffractive,~~ diffractive optical surface is preferably provided in the first lens unit.

Please substitute the following paragraph for the paragraph starting at page 28, line 27 and ending at page 29, line 4.

A19

(4-3) When the ~~diffractive,~~ diffractive optical surface is given by the foregoing Eq (a), it is preferably one satisfying the following conditions:

$C1 < 0$, and

$C2 > 0$.

Please substitute the following paragraph for the paragraph starting at page 29, line 8 and ending at line 16.

A20

Figs. 13A and 13B are ~~the~~ views showing the fifth embodiment, in which the lens system has at least one ~~diffractive,~~ diffractive optical surface in the lens system, has a first lens unit L1 of a positive refracting power and a second lens unit L2 of a positive refracting power in the order (named) from the object side, and is arranged to move the first lens unit toward the object side during focusing from the infinity object to the near object.

Please substitute the following paragraph for the paragraph starting at page 29, line 17 and ending at line 18.

A21

In this fifth embodiment the eighth surface is comprised of a ~~diffractive,~~ diffractive optical surface.

Please substitute the following paragraph for the paragraph starting at page 30, line 1 and ending at line 2.

(5-2) The ~~diffractive,~~ diffractive optical surface is preferably provided in the first lens unit.

Please substitute the following paragraph for the paragraph starting at page 30, line 3 and ending at line 7.

(5-3) When the ~~diffractive,~~ diffractive optical surface is given by the foregoing Eq (a), it is preferably one satisfying the following conditions:

$C1 < 0$, and

$C2 > 0$.

Please substitute the following paragraph for the paragraph starting at page 30, line 11 and ending at line 21.

Figs. 16A and 16B are ~~the~~ views showing the sixth embodiment, in which the lens system has at least one ~~diffractive,~~ diffractive optical surface in the lens system, has a first lens unit L1 of a positive refracting power, a second lens unit L2 of a negative refracting power, and a third lens unit L3 of a positive refracting power in the order (named) from the object side, and is arranged to move the second lens unit L2 toward the image side plane and the third lens unit L3 toward the object side with the first lens unit being fixed, during focusing from the infinity object to the near object.

Please substitute the following paragraph for the paragraph starting at page 30, line 22 and ending at line 23.

In this sixth embodiment the first surface is comprised of a ~~diffractive,~~ diffractive optical surface.

Please substitute the following paragraph for the paragraph starting at page 31, line 14 and ending at line 18.

(6-3) When the ~~diffractive,~~ diffractive optical surface is given by the foregoing Eq (a), it is preferably one satisfying the following conditions:

$C1 < 0$, and

$C2 > 0$.

Please substitute the following paragraph for the paragraph starting at page 32, line 3 and ending at line 15.

Figs. 19A and 19B are ~~the~~ views showing the seventh embodiment, in which the lens system has at least one ~~diffractive,~~ diffractive optical surface in the lens system, has a first lens unit L1 of a positive refracting power, a second lens unit L2 of a negative refracting power, a third lens unit L3 of a positive refracting power, and a fourth lens unit L4 of a negative refracting power in the order (named) from the object side, and is arranged to move the second lens unit L2 toward the image side plane and the third lens unit L3 toward the object side with first lens being fixed, during focusing from the infinity object to the near object.

Please substitute the following paragraph for the paragraph starting at page 32, line 16 and ending at line 17.

A28

In this seventh embodiment the first surface is comprised of a ~~diffractive,~~ diffractive optical surface.

Please substitute the following paragraph for the paragraph starting at page 33, line 21 and ending at page 34, line 5.

A29

Figs. 22A and 22B are ~~the~~ views showing the eighth embodiment, in which the lens system has at least one ~~diffractive,~~ diffractive optical surface in the lens system, has a first lens unit L1 of a positive refracting power, a second lens unit L2 of a negative refracting power, a third lens unit L3 of a positive refracting power, and a fourth lens unit L4 of a positive refracting power in the order (named) from the object side, and is arranged to move the second lens unit L2 toward the image side plane and the third lens unit L3 toward the object side with the first lens unit being fixed, during focusing from the infinity object to the near object.

Please substitute the following paragraph for the paragraph starting at page 34, line 6 and ending at line 7.

A30

In this eighth embodiment the ninth surface is comprised of a ~~diffractive,~~ diffractive optical surface.

Please substitute the following paragraph for the paragraph starting at page 34, line 27 and ending at page 35 line 4.

A31

(8-3) When the ~~diffractive,~~ diffractive optical surface is given by the foregoing Eq (a), it is preferably one satisfying the following conditions:

$C1 < 0$, and

$C2 > 0$.

Please substitute the following paragraph for the paragraph starting at page 35, line 18 and ending at line 27.

A32

In general, the macrolenses increase their axial chromatic aberration and chromatic aberration of magnification with increase in the photographic magnification. Particularly, concerning the photographic magnification, the use of the ~~diffracting,~~ diffracting optical element in the range of Eq (1) is significantly effective in correction of chromatic aberration. The upper limit of the photographic magnification β is preferably set to approximately $\beta = 10$ in terms of correction of aberration.

Please substitute the following paragraph for the paragraph starting at page 36, line 26 and ending at page 37, line 5.

A33

The use of the ~~diffracting,~~ diffracting optical element facilitates the correction for the axial chromatic aberration and chromatic aberration of magnification during photography at high magnifications and, particularly, coma is effectively corrected by changing the spacing between the focusing units before and after the stop during the focusing to the near object.

Please substitute the following paragraph for the paragraph starting at page 48, line 26 and ending at page 49, line 3.

Cemented surfaces of the cemented lenses in the second and third lens units can control absolute values of chromatic aberrations of the respective units themselves to a small level and ~~well~~ correct well the aberration variations during focusing.

Please substitute the following paragraph for the paragraph starting at page 50, line 13 and ending at line 21.

Condition (21) concerns the power of the first lens unit. In the range below the lower limit the power of the first lens unit becomes stronger, which is advantageous in compactification, but it becomes difficult to ~~well~~ correct well variations in spherical aberration during photography of near object. In the range over the upper limit on the other hand, aberration can be advantageously corrected, but it is difficult to realize compactification.

Please substitute the following paragraph for the paragraph starting at page 52, line 22 and ending at line 26.

Cemented surfaces of the cemented lenses in the second and third lens units can control absolute values of chromatic aberrations of the respective units themselves to a small level and ~~well~~ correct well the aberration variations during focusing.

Please substitute the following paragraph for the paragraph starting at page 54, line 5 and ending at line 13.

Condition (26) concerns the power of the first lens unit. In the range below the lower limit the power of the first lens unit becomes stronger, which is advantageous in compactification, but it becomes difficult to ~~well~~ correct well variations in spherical aberration

A 37 Cont'd

during photography of near object. In the range over the upper limit on the other hand, aberration can be advantageously corrected, but it is difficult to realize compactification.

Please substitute the following paragraph for the paragraph starting at page 56, line 10 and ending at line 14.

A 38

Cemented surfaces of the cemented lenses in the second and third lens units can control absolute values of chromatic aberrations of the respective units themselves to a small level and ~~well~~ correct <u>well</u> the aberration variations during focusing.

Please substitute the following paragraph for the paragraph starting at page 68, line 9 and ending at line 15.

A 39

In addition, according to the present invention, it is feasible to accomplish the lens system wherein the diffracting optical element is used in part of the optical system to ~~well~~ correct <u>well</u> the axial chromatic aberration and chromatic aberration of magnification, which becomes worse with increase in the photographic magnification, and the optical device using the same.